



# State of Utah

DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

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February 22, 1991

TO: Wayne Hedberg, Permit Lead

FROM: Tony Gallegos, Reclamation Engineer *aa*

RE: Review of Reclamation Plan, Escalante Mine Mill  
Tailings Facility, Hecla Mining Company, M/021/004,  
Iron County, Utah

I have reviewed the above mentioned reclamation plan and prepared a reclamation cost estimate. My review comments are listed below and the cost estimate is attached.

## R613-004-110. Reclamation Plan

The reclamation plan first describes the tailing area as encompassing 58 acres of surface area and later refers to the tailings as involving 65 acres. It is assumed that the 65 acre figure represents the tailings area after the final regrading has been completed. This 65 acre figure was used in the Division estimate.

The plan calls for the removal of all structures and equipment from the surface areas prior to regrading and reclamation. No description of these structures or equipment was included in the plan, therefore, a general lump sum was used in the Division estimate.

The plan calls for placing 6" of clay, 14" of subsoil and then 4" of topsoil over the tailings. The plan does not state whether the clay will be compacted or placed wet. The elastic properties of the clay cap and, therefore, the integrity of the barrier will be greatly improved by wetting it or placing it in a condition wet of optimum. The Division reclamation estimate does not include any compaction or wetting of the clay cap at this time.

The plan mentions an existing topsoil stockpile, but does not mention the amount of topsoil stored. It is unknown if sufficient topsoil exists to cover the 65 acre tailings area with a 4" depth. The Division estimate assumes that sufficient topsoil does exist with no excess.

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Escalante Mine Mill Tailings  
Review  
M/021/004  
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The clay and subsoil material used in covering the tailings will come from borrow areas in various locations. The reclamation plan states that all of the possible borrow areas encompass approximately 180 acres. The operator estimates that half of this area will eventually be disturbed. Due to the sporadic occurrence of the material deposits, no estimate of the quantities available has been made and, therefore, the Division estimate uses a more conservative figure of 120 acres of disturbance at these borrow areas. The plan calls for salvage of topsoil at any borrow area used, however, no estimate of the depth or volume of topsoil available has been presented. The volume and cost of redistributing this topsoil was considered to be minimal and absorbed by other costs in the Division estimate.

The plan does not include the application of mulch at any revegetation sites other than the tailings area, nor the application of fertilizer to any area. Since the integrity of the tailings cap also relies on successful revegetation, the application of fertilizer to the tailings topsoil layer may be desirable. Successful revegetation of the surrounding area will help prevent erosion and reduce the amount of surface runoff which will further protect the tailings area. The addition of mulch and fertilizer to those areas being revegetated may, therefore, be worthwhile in the long term stabilization of this site. The Division estimate does not include mulch or fertilizer application at this time.

jb  
Attachment  
M021004.mem



## RECLAMATION ESTIMATE

Hecla Mining Company

Escalante Silver Mine – Mill Tailings Facility      Iron County

M/021/004

last revision

2/21/91

Prepared by Utah State Division of Oil, Gas & Mining

### Reclamation Details

- All structures and equipment to be removed from the site (1.5 acre EST)
- Tailings covered by: 6" clay, 14" subsoil, 4" topsoil (65 acres)
- Hay incorporated into tailings subsoil & topsoil caps(2-3,000 lb/acre)
- Road to tailings reduced via ripping & seeding(5,800' x 12' = 1.6 acre)
- Impoundment runoff ditch constructed around tailings cap (7,200')
- Borrow areas ripped, topsoiled & seeded (ASSUMED 120 acres)
- Roads to borrow areas ripped, water barred & seeded (5 acres)
- Rip topsoil stockpile area & drill seed (9 acre ESTIMATE)
- Monitor groundwater wells for a minimum of 2 years after reclamation
- Fence maintenance for 3 years (7,900 ft long)
- Areas revegetated via drill seeding unless impractical(=>hand seeding)
- Disturbed area = office+tailings+borrow+roads+stockpile= 202 acres

<u>Description</u>	<u>Amount</u>	<u>\$/Unit</u>	<u>Cost-\$</u>
-Structure demolition/removal	lump sum	5,000	5,000
-Tailings clay cap	52,433 CY	2.92	153,104
-Tailings subsoil cap	122,344 CY	1.42	173,728
-Tailings topsoil cap	34,955 CY	1.93	67,463
-Disc hay into tailings soils	65 acre	357	23,205
-Ripping tailings road (0.40 mph)	1.6 acre	603	965
-Impoundment runoff ditch construction	7,200 ft	0.32	2,304
-Ripping borrow areas (0.60 mph)	120 acre	407	48,840
-Ripping borrow area roads (0.50 mph)	5 acre	485	2,425
-Rip topsoil stockpile area	9.0 acre	407	3,663
-Reseed all disturbed areas	202 acre	330	66,660
-Monitor groundwater wells(twice/month)	2 yr	7,200	14,400
-Fence maintenance(twice/month)	3 yr	2,400	7,200
SUBTOTAL			480,698
+ 10% CONTINGENCY			48,070
SUBTOTAL			528,768
+ 5 yr ESCALATION(1.45%)			39,464
TOTAL			568,231
ROUNDED TOTAL IN 1996-\$			\$568,000